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B60Q 1/44

(52) UK CL (Edition K)
F4R RFA RFC R364 R370 R376

(58) Documents cited
US 3787808 A US 3702459 A

(58) Field of search
UK CL (Edition J) F4R RFA RFC
INT CL[4] B60Q 1/44

# (54) Vehicle warning lamps responsive to braking operation

(57) A vehicle lamp apparatus comprising a plurality of light emitting members arranged at predetermined intervals in the widthwise direction of a vehicle body, and a control member for turning on the light emitting means in response to the actuation of a brake operation, and turning off the light emitting means in a time division mode in response to the brake release operation.

GB 2 226 875 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

FIG. 1

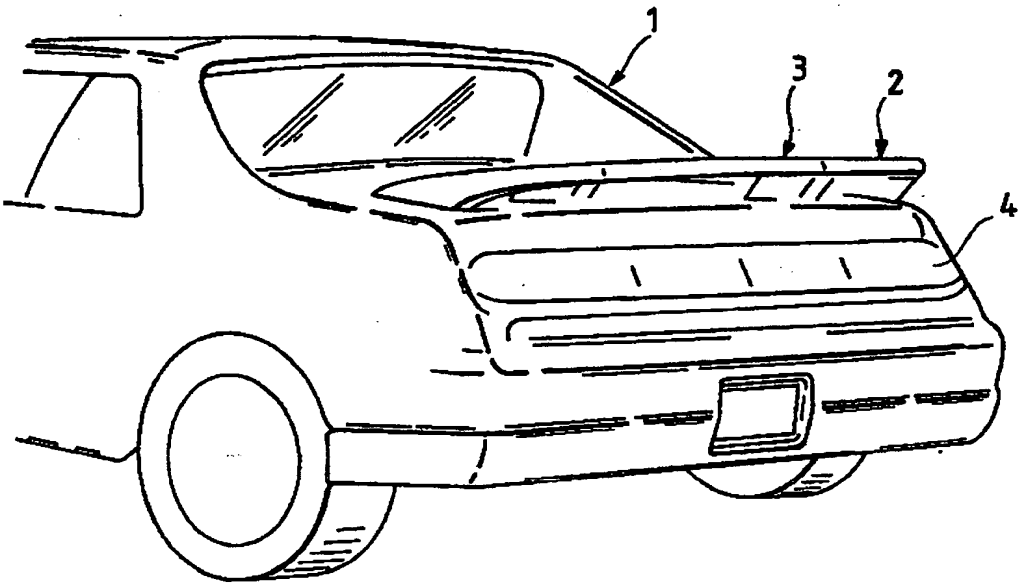



FIG. 19

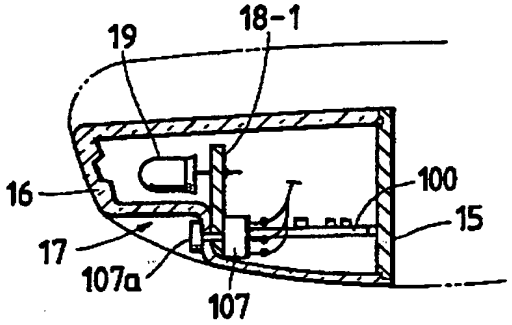
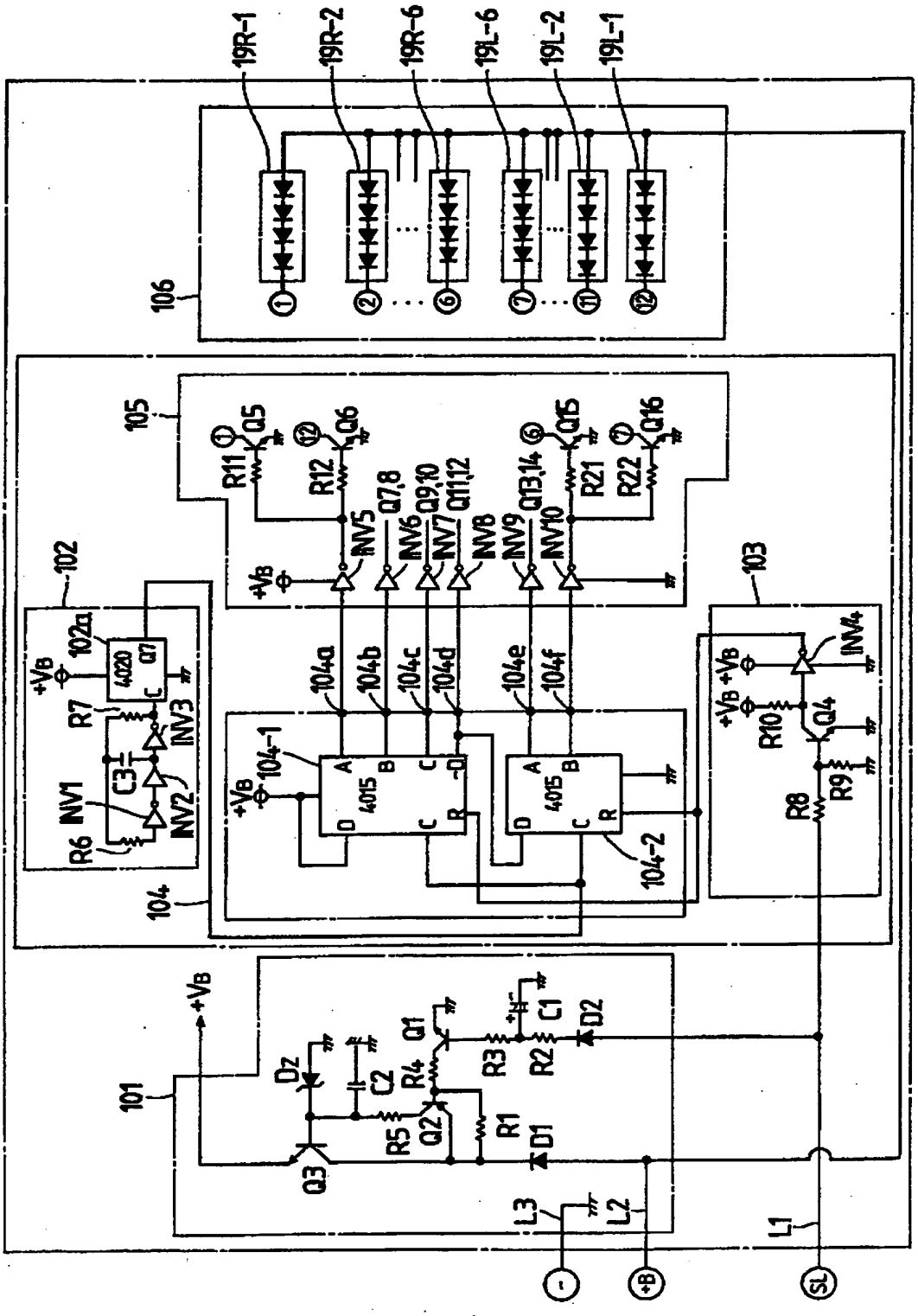


FIG. 2


19R-1
19R-2
19R-6
19L-6
19L-2
19L-1
106
105
102
103
104
101
+VB
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R12
R21
R22
Q5
Q6
Q15
Q16
Q7,8
Q9,10
Q11,12
Q13,14
INV1
INV2
INV3
INV4
INV5
INV6
INV7
INV8
INV9
INV10
R6
R7
C3
102a
4020
104a
104b
104c
104d
104e
104f
104-1
104-2
4015
R10
Q4
R8
R9
C1
D2
R3
R2
Q1
D2
C2
R4
R5
Q2
R1
D1
Q3
L3
L2
L1
-
+B
SL

FIG. 3

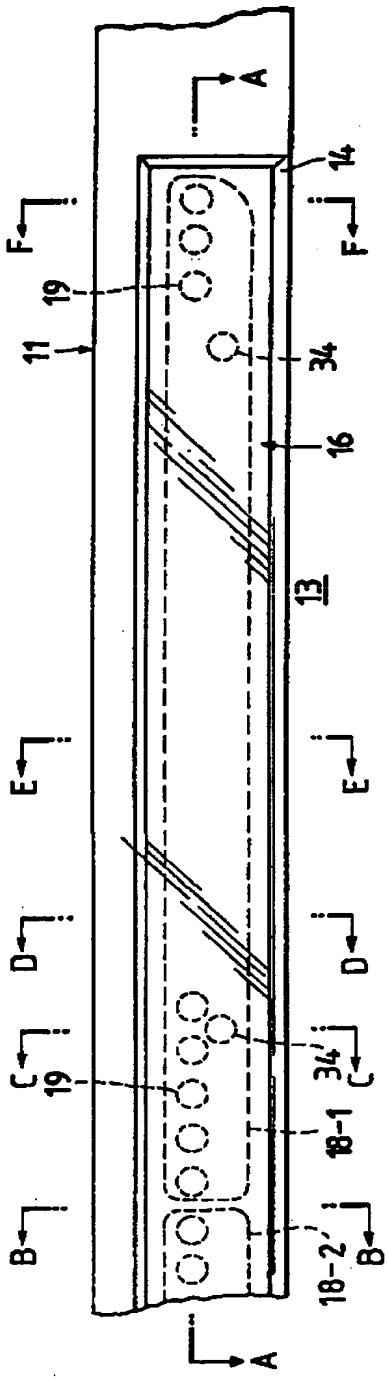

A
F
F
14
19
11
34
16
13
E
E
D
D
C
19
34
C
18-1
B
18-2
B
A

FIG. 4

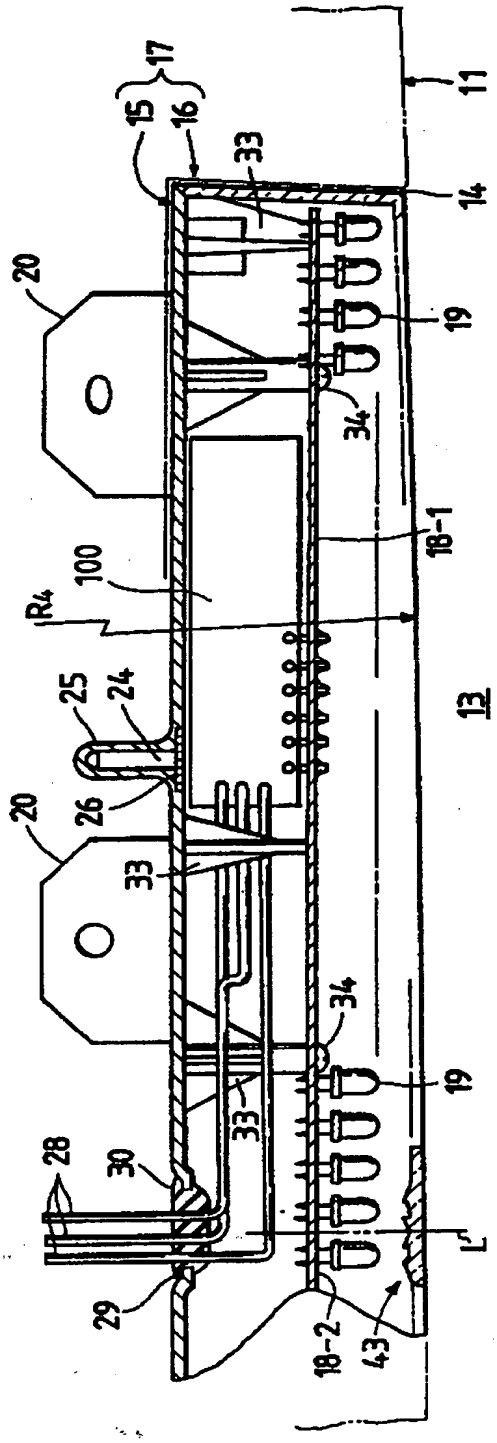

17
15
16
33
14
11
20
19
34
18-1
100
R4
25
24
26
20
33
34
19
28
30
33
29
18-2
43
13

FIG. 5

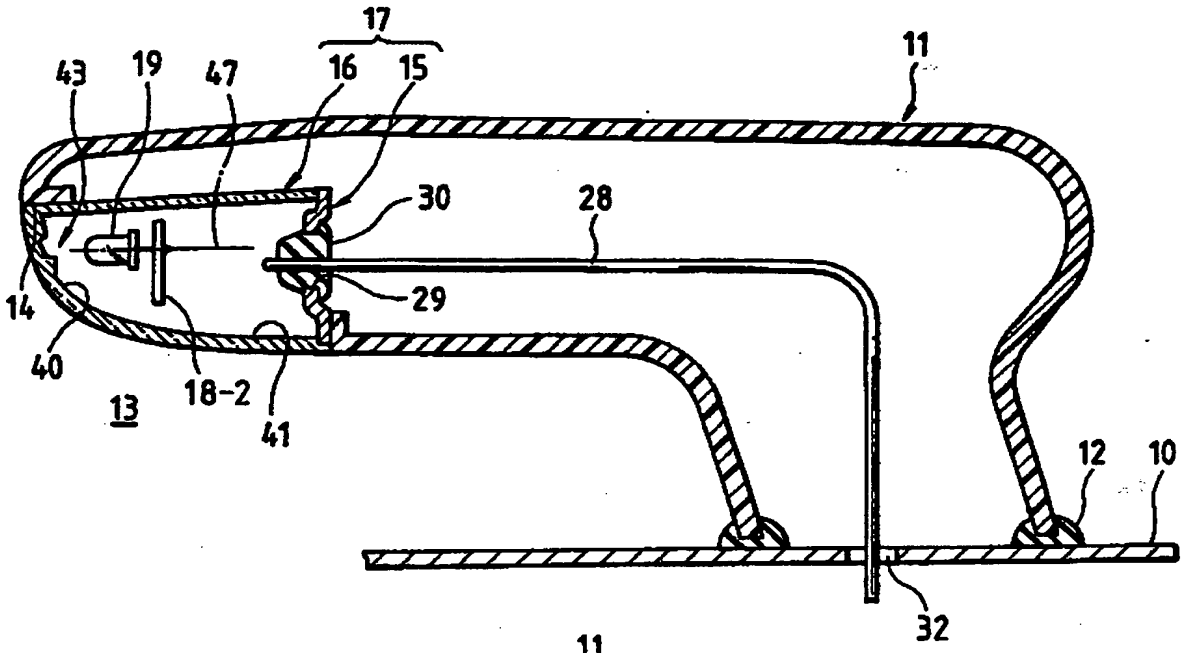



FIG. 6

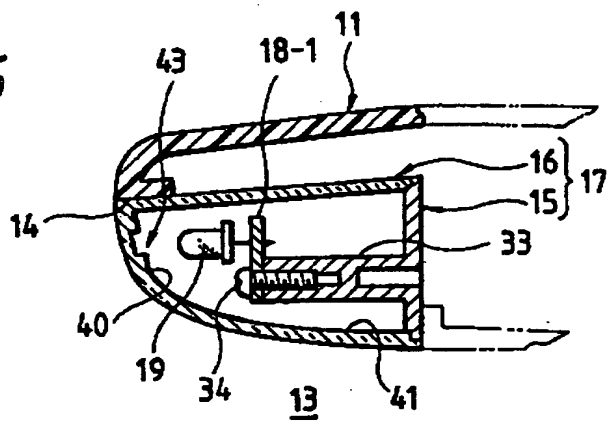



FIG. 7

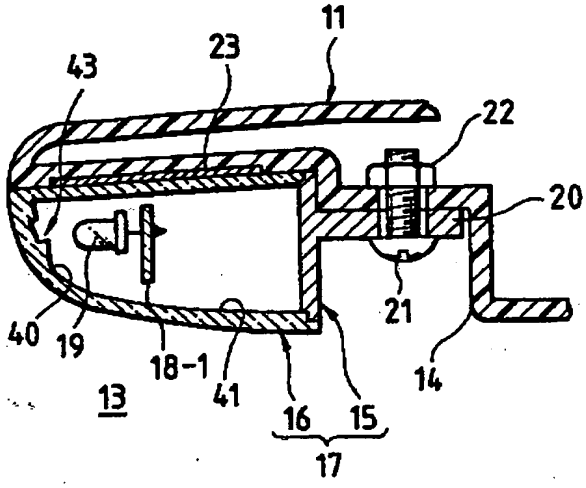


FIG. 8

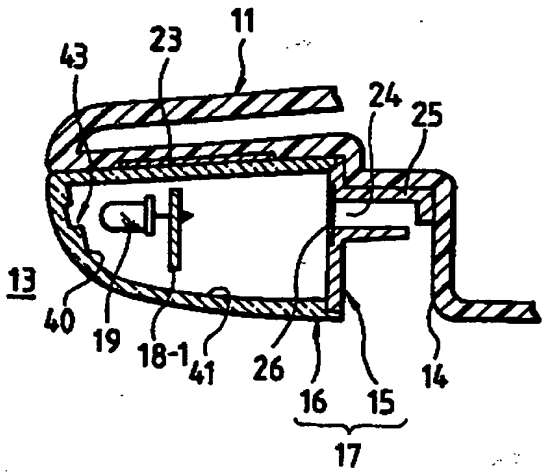



FIG. 9

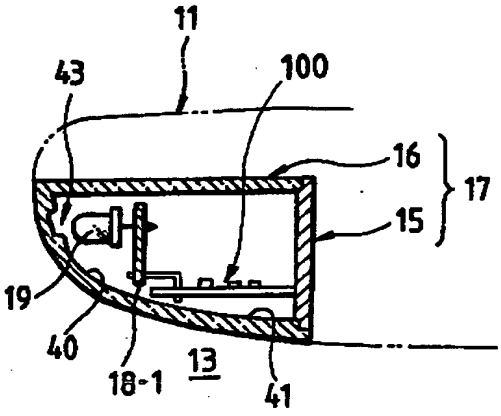



FIG. 10

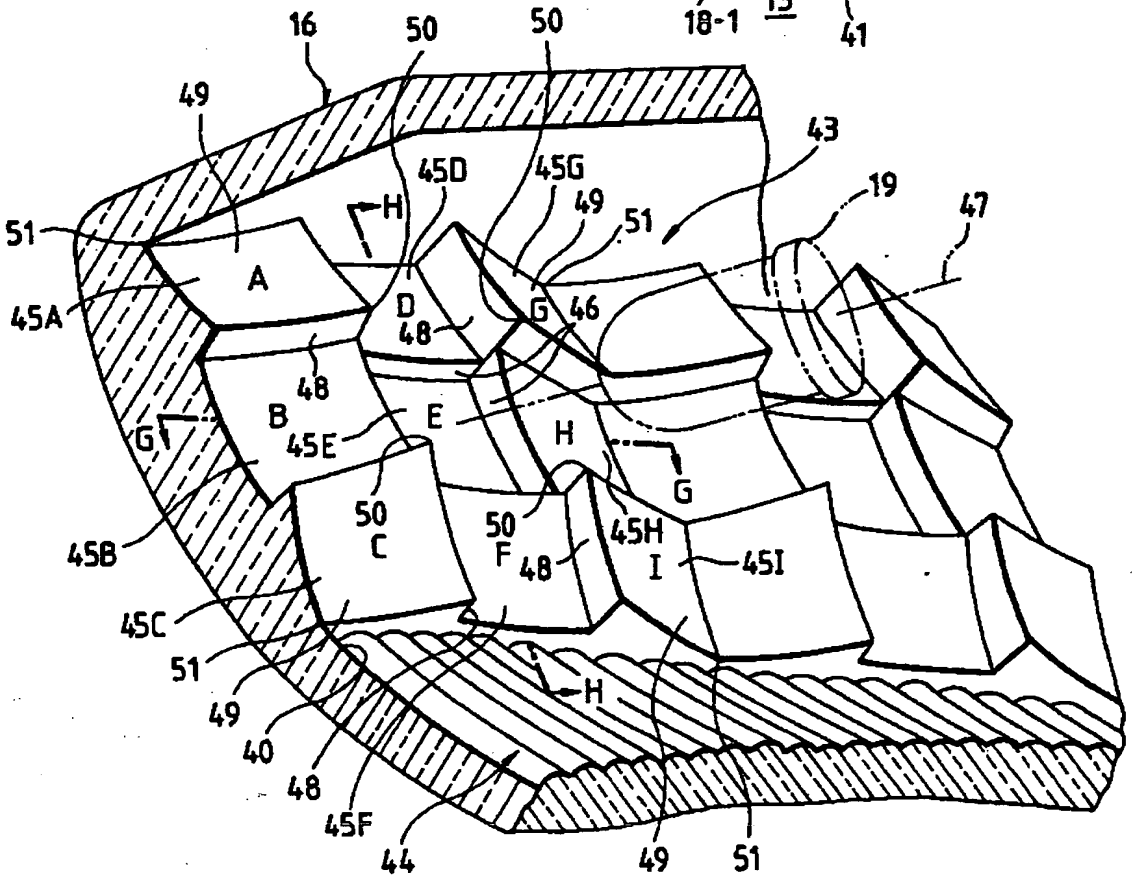


FIG. 11

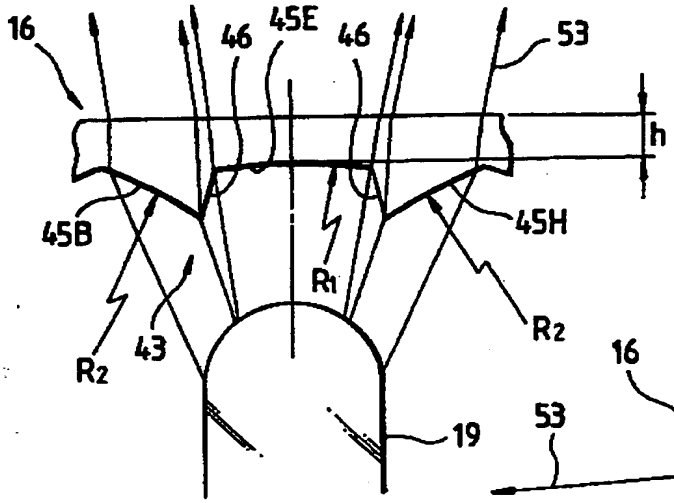



FIG. 12

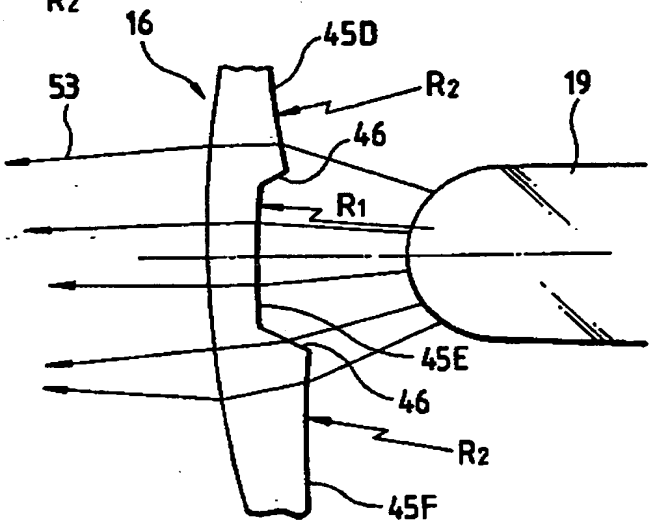



FIG. 13

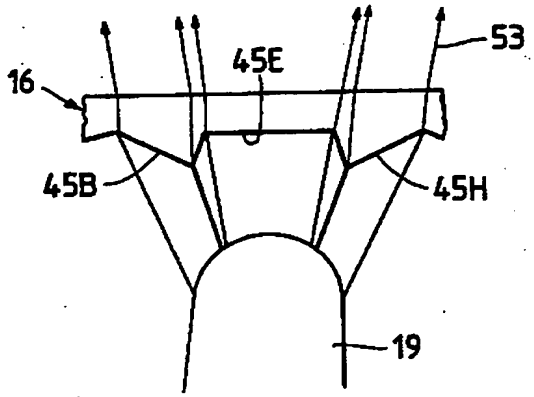



FIG. 14

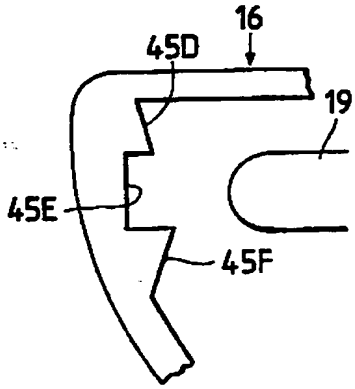


FIG. 15

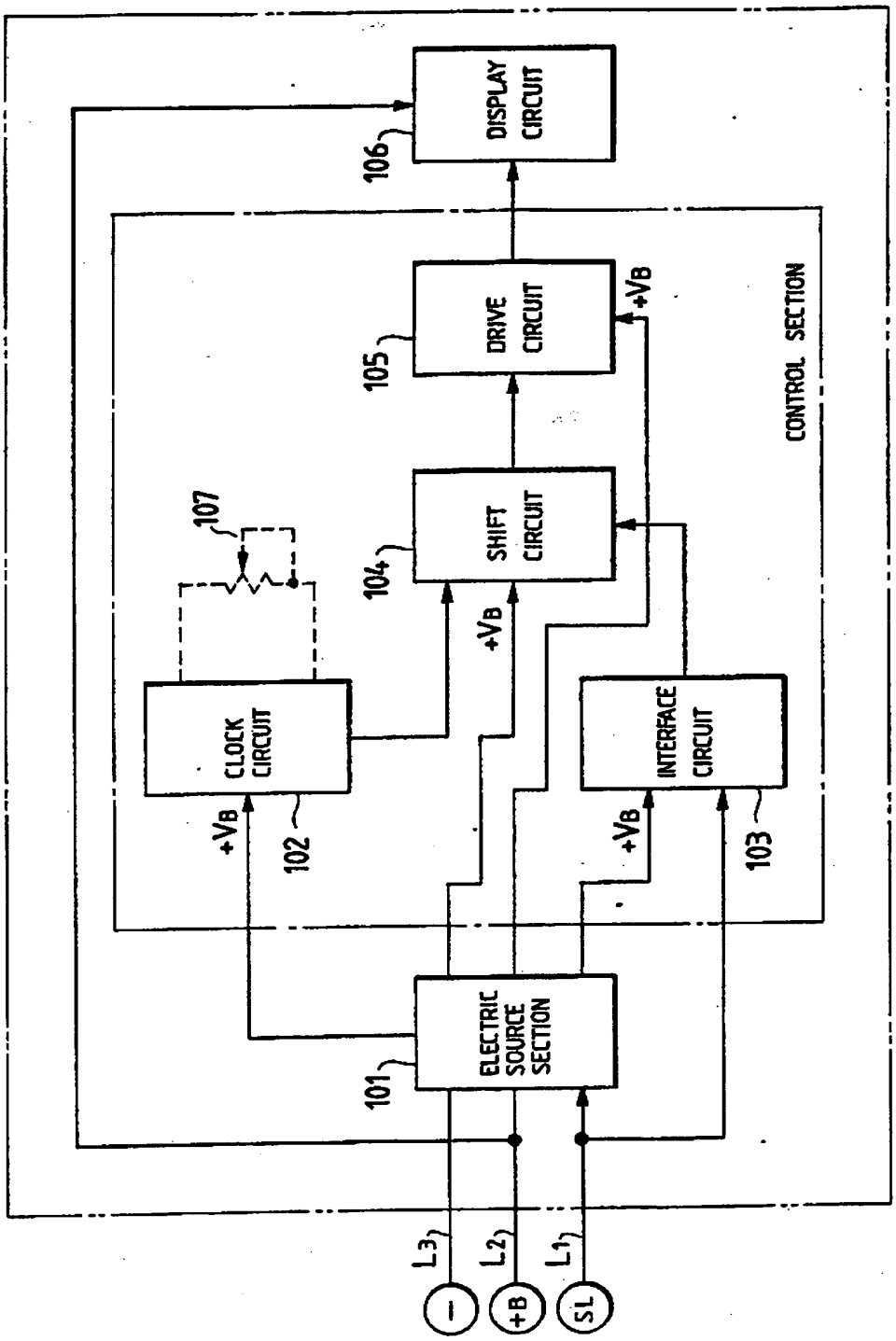

DISPLAY CIRCUIT
106
DRIVE CIRCUIT
105
+VB
SHIFT CIRCUIT
104
107
CLOCK CIRCUIT
102
+VB
INTERFACE CIRCUIT
103
+VB
CONTROL SECTION
ELECTRIC SOURCE SECTION
101
L3
L2
L1
−
+B
SL

FIG. 16A

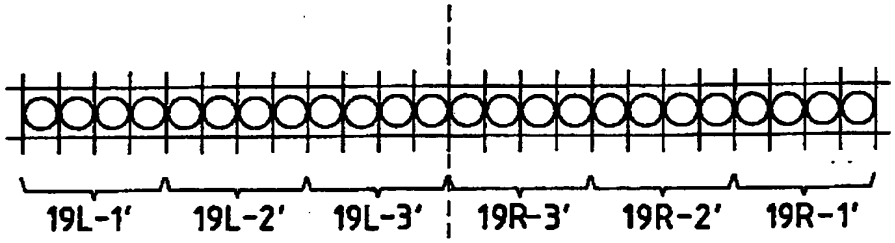



FIG. 16B

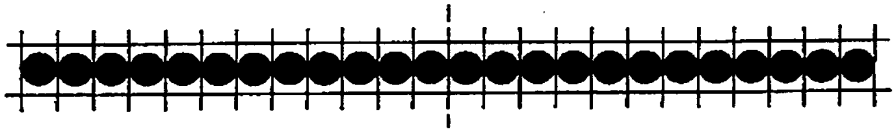


FIG. 16C

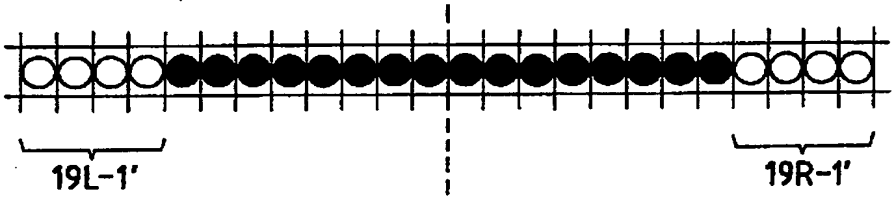



FIG. 16D

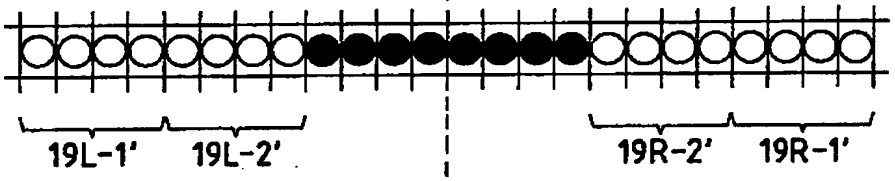



FIG. 16E

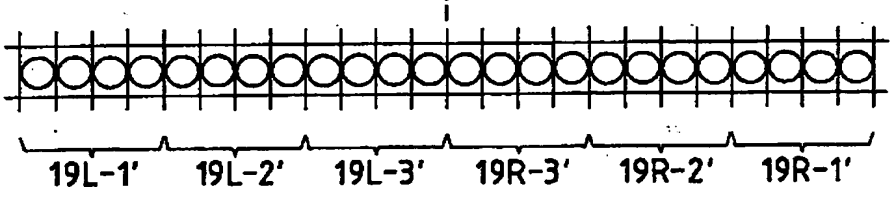


FIG. 16A

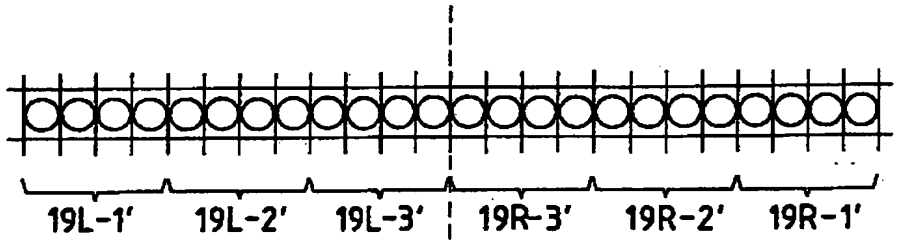



FIG. 16B

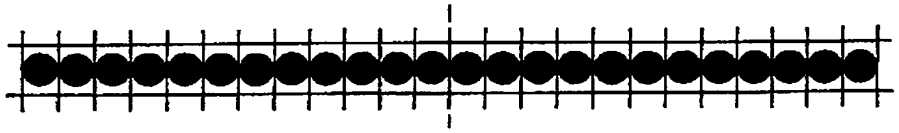


FIG. 16C

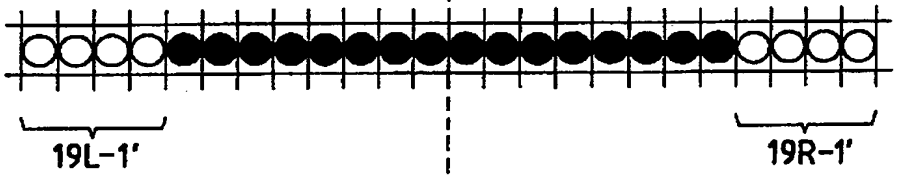



FIG. 16D

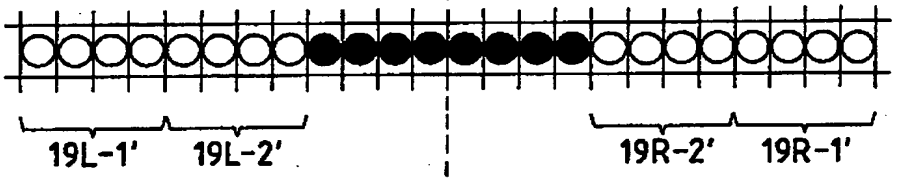



FIG. 16E

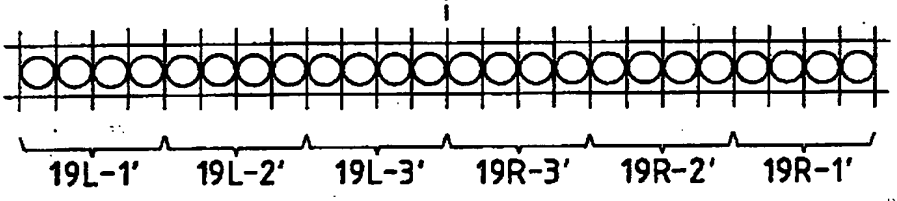


FIG. 17

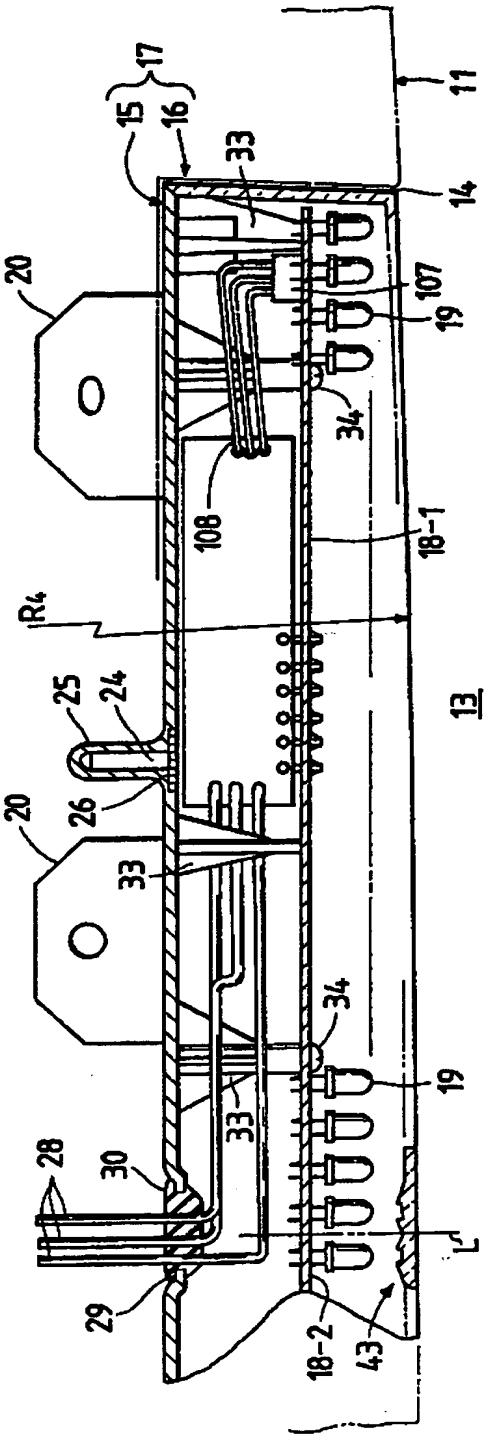
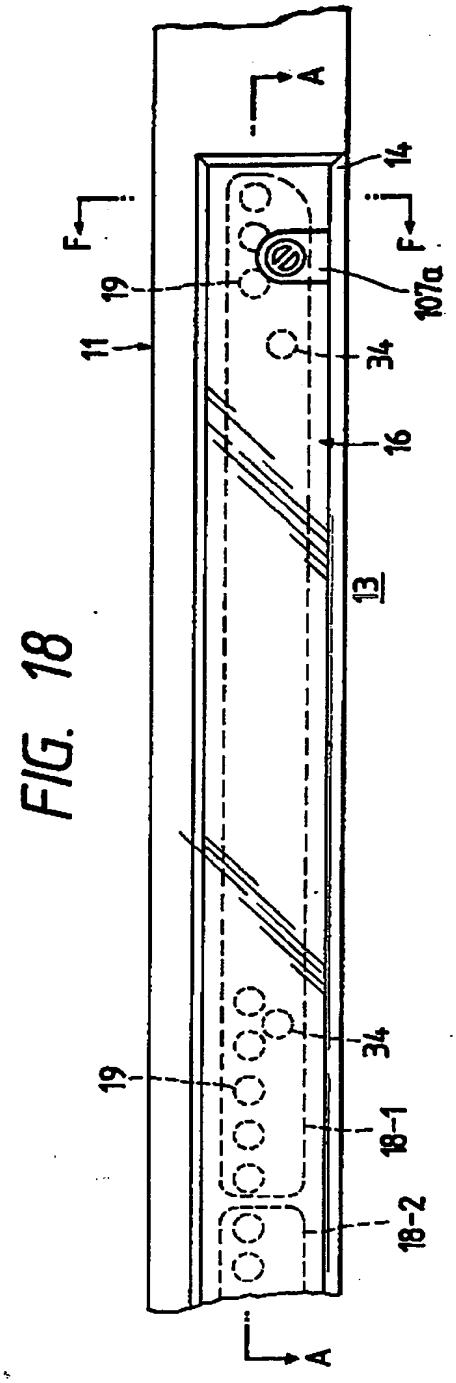

17
15
16
33
11
14
20
107
19
34
108
18-1
R4
25
24
26
13
20
33
34
19
28
30
33
L
29
18-2
43

FIG. 18


A
F
F
14
19
107a
11
34
16
13
19
34
18-1
18-2
A

# VEHICLE LAMP APPARATUS

The present invention relates to a vehicle stop lamp apparatus which is operated during a braking operation to send to drivers of the following vehicles a warning signal representing that the vehicle decelerates or stops.

In recent vehicles, as shown in Fig. 1, a stop lamp 3 is built in a rear protruding part of a rear spoiler 2 provided on the rear end portion of the vehicle body 1, independently from a brake lamp 4. When the brake of the vehicle is operated, the stop lamp 3 turns on together with the brake lamp 4 to make the driver in the following vehicle draw his attention more reliably to the vehicle's deceleration or stop, thereby to prevent a collision. Such a stop lamp is disclosed in, for example, Unexamined Japanese Utility Model Application (OPI) Nos. 61-190779 and 61-190780 (the term "OPI" as used herein means an "unexamined published application").

However, the conventional single stop lamp 3 turns off immediately after the brake is released, that is, the warning signal disappears in a moment. Therefore, the warning signal would become monotonous and, accordingly, the effect of the

warning signal to the driver in the following vehicle decreases as much, which is dangerous.

Accordingly, an object of the present invention is to eliminate the above-described problem accompanying a conventional stop lamp. Therefore, an object of the present invention is to provide a vehicle stop lamp apparatus capable of warning to a driver in the following vehicle reliably.

The above object of the invention has been achieved by the provision of a vehicle lamp apparatus which, according to the invention, comprises: a plurality of light emitting means arranged at predetermined intervals in the widthwise direction of a vehicle body; and a control means for turning on the light emitting means in response to the actuation of a brake operation, and turning off the light emitting means in a time division mode in response to the brake release operation. With the vehicle lamp apparatus of the present invention, in response to the brake release operation the plurality of light emitting means turn off in a time division mode.

In the accompanying drawings:-

Fig. 1 is a perspective view showing a rear spoiler incorporating a conventional stop lamp;

Fig. 2 is a circuit diagram, partly as a block diagram, showing one example of the arrangement of a vehicle lamp, a stop lamp, according to this invention;

Fig. 3 is a front view showing essential components of the stop lamp built in a rear spoiler;

Fig. 4 is a sectional view taken along line A-A in Fig. 3;

Fig. 5 is a sectional view taken along line B-B in Fig. 3;

Fig. 6 is a sectional view taken along line C-C in Fig. 3;

Fig. 7 is a sectional view taken along line D-D in Fig. 3;

Fig. 8 is a sectional view taken along line E-E in Fig. 3;

Fig. 9 is a sectional view taken along line F-F in Fig. 3;

Fig. 10 is an enlarged perspective view of a light control section;

Fig. 11 is a sectional view taken along line G-G in Fig. 10;

Fig. 12 is a sectional view taken along line H-H in Fig. 10;

Figs. 13 and 14 are a horizontal sectional view and a vertical sectional view, respectively, showing one modification of the light control section;

Fig. 15 is a block diagram showing the aforementioned example of the stop lamp according to the invention;

Fig. 16 is an explanatory diagram showing the states of the groups of photodiodes with twelve photodiodes on each of the right and left printed circuit boards, when turned on and off in response to brake "ON" and "OFF" operations;

Fig. 17 is a sectional view taken along line A-A in Fig. 18, showing the position of a variable resistor connected to a clock circuit in the stop lamp;

Fig. 18 is a front view of the stop lamp, showing the adjusting knob of the variable resistor which is exposed outside the front lens of the stop lamp; and

Fig. 19 is a sectional view taken along line F-F in Fig. 18.

A vehicle lamp apparatus according to the present invention will be described in detail with reference to accompanying drawings.

Fig. 3 is a front view showing essential components of a high-mount stop lamp (hereinafter referred to merely as "a stop lamp) built in the rear spoiler, which is one example of

the vehicle lamp apparatus according to the invention. Fig. 4 is a sectional view taken along line A-A in Fig. 3. Fig. 5 is a sectional view taken along line B-B in Fig. 3. Fig. 6 is a sectional view taken along line C-C in Fig. 3. Fig. 7 is a sectional view taken along line D-D in Fig. 3. Fig. 8 is a sectional view taken along line E-E in Fig. 3. Fig. 9 is a sectional view taken along line F-F in Fig. 3. Fig. 10 is an enlarged view of a light control section. Figs. 11 and 12 are sectional views taken along line G-G and line H-H in Fig. 10, respectively.

Figs. 3 through 9, show a rear upper surface 10 of the vehicle body (Fig. 5), a rear spoiler 11 mounted on the rear upper surface 10 of the vehicle body through a gasket 12, the spoiler 11 being wing-shaped and elongated laterally of the vehicle body and a stop lamp 13 which is fitted in a notch 14 which is formed elongated laterally in the lower portion of the middle part of the rear protrusion of the rear spoiler 11. The stop lamp 13 is also elongated laterally. More specifically, the stop lamp 13 comprises a lamp unit 17 including a plate-shaped lamp body 15 and a front lens 16 which is substantially U-shaped in section and is opened forwardly of the vehicle body. The open end of the front lens 16 is secured to the front surface (facing towards the rear side of the vehicle body) of the lamp body 15 by ultrasonic welding, for instance. Printed substrates 18-1 and 18-2 mounting thereon a

plurality of photo-diodes 19 and a control substrate 100 (described later in detail) are built in the lamp unit 17.

As shown in Figs. 4 and 7, a plurality of fixing pieces 20 extend from the rear surface of the lamp body 15 towards the front side of the vehicle body. These fixing pieces 20 are fixedly secured to the ceiling of the notch 14 with bolts 21 and nuts 22. The upper surface of the front lens 16 is bonded to the ceiling of the notch 14 with a double side adhesive tape 23 (Fig. 7) or adhesive. A communicating hole 24 and a communicating pipe 25 (Figs. 4 and 8) are provided on the rear surface of the lamp body 15 at a predetermined position so as to communicate the inside of the lamp unit 17 with the inside of the rear spoiler 11. The communicating pipe 25 extends towards the front side of the vehicle body, and its end portion is bent downwardly to prevent rainwater or the like from entering. The inside of the lamp unit 17 is communicated with the outside through the communicating pipe 25. Therefore, air will freely flow in the lamp unit 17 so that the temperature and humidity inside the lamp body are kept substantially equal to those of the atmosphere, which will minimize or prevent the formation of water drops or the variation in temperature and pressure inside the lamp unit which may be caused by the on-off operations of the photodiodes 19. A filter 26 (Figs. 4 and 8) is provided at the inner open end of the communicating pipe 25, i.e., at the communicating hole 24. The filter 26 is made of

a porous film such as fluorine film, polyethylene film, ultra-macromolecular polyethylene film or acrylic film, that is, it is high in gas permeability. Therefore, air can freely pass through it. However, its porosity is small enough to prevent the entrance of water.

A cord lead-out hole 29 (Figs. 4 and 5) is formed in the middle portion of the elongated lamp body 15, to lead wires 28 into the rear spoiler. A rubber bushing 30 is fitted in the cord lead-out hole 29. One end of the wires 28 is connected to the electric circuit on the control substrate 100, and the other end is led into the vehicle body through the rear spoiler 11 and an inserting hole 32 (Fig. 5) formed in the rear upper surface 10 of the vehicle body. As shown in Figs. 4 and 6, a plurality of board mounting posts 33 extend from the front surface of the lamp body 15 towards the front side of the lamp unit 17, and the printed substrates 18-1 and 18-2 are secured to the ends of the board mounting posts 33 with screws 34.

The photodiodes 19 are arranged in a horizontal line at predetermined intervals on the front surfaces of the printed substrates 18-1 and 18-2. The axes 47 of the photodiodes 19 (Fig. 5) extends substantially vertical to the arrangement direction of the photodiodes 19 and are substantially parallel with the longitudinal central axis L (Fig. 4) of the vehicle body. In the preferred embodiment, twenty-four photodiodes 19 are mounted on each of the printed substrates 18-1 and 18-2.

The printed substrates 18-1 and 18-2 are electrically connected to each other, and the control substrate 100 is electrically and mechanically connected to the printed substrate 18-1.

The front lens 16 is of a laterally elongated box type made of transparent resin, and it is colored red or yellow, for example. As shown in Figs. 5 through 9, the inner surface of the front lens 16; i.e., its wall 40 confronting the photodiodes 19 is inclined towards the rear side of the vehicle body, and its lower end portion is curved with a certain curvature, thus merging with the bottom wall 41. As shown in Fig. 10, a light control section 43 is formed in the upper portion of the inner surface 40 for each of the photodiodes 19, and side steps 44 are formed in the lower end portion of the inner surface 40.

As shown in Figs. 10 through 12, each light control section 43 functions to lead the output light of the respective photodiode 19 towards the rear end of the vehicle body so that the stop lamp is observed with ease. The light control section 43 is made up of nine prisms 45A through 45I which are arranged in a 3 X 3 matrix form. The central axis of the central prism 45 is substantially in alignment with the central axis of the respective photodiode 19. The central prism 45E, as shown in Figs. 11 and 12, is curved inwardly with a predetermined curvature ($R_1$). The four prisms 45B, 45D, 45F and 45H located above and below and right and left of the central prism 45E are

formed as follows: The inner edge of each of the four prisms, which merges with the central prism 45E, is raised higher than the prism 45E, thus forming a step 46, and the thickness decreases from the inner edge thus raised towards the outer edge. Accordingly, the right and left prisms 45H and 45B, as shown in Fig. 11, are substantially triangular in horizontal section and symmetrical with each other. On the other hand, the upper and lower prisms 45D and 45F, as shown in Fig. 12, are substantially triangular in vertical section, and the step of the lower prism 45F is larger in height than that of the upper prism 45D. The steps 46 of the right and left prisms 45H and 45B, as shown in Fig. 10, are larger in height than that of the upper prism 45D and smaller than that of the lower prism 45F. The surfaces of the four prisms 45B, 45D, 45F and 45H are formed into inwardly curved surfaces with a predetermined curvature ($R_2$).

The remaining four corner prisms 45A, 45C, 45G and 45I are formed as follows: The four corner prisms are raised higher than the above-described four prisms 45B, 45D, 45F and 45H, thus having steps 48. The surface 49 of each of the four corner prisms is formed into an inwardly curved surface with a predetermined curvature in such a manner that it is inclined from the inner corner 50 towards the outer corner diametrically opposite thereto. That is, the thickness of each of the four corner prisms 45A, 45C, 45G and 45I is maximum at the inner

corner 50 and minimum at the outer corner 51, and these prisms are substantially triangular both in horizontal section and in vertical section. In Fig. 11, reference character "h" designates the reference thickness of the front lens 16.

The prisms 45A through 45I (except the prism 45E) are formed different in step height and in surface curvature as is described above, and accordingly they are different both in optical refractive angle and refractive direction. Therefore, the output light 53 of the photodiode 19 is refracted towards the optical axis 47 so as to emerge from the front lens 16 backwardly of the vehicle body.

In the above-described embodiment, although the prisms 45A through 45I have the inwardly curved surfaces with the predetermined curvatures, however, the invention is not limited thereto or thereby. For instance, as shown in Figs. 13 and 14, all the prisms 45A through 45I may have flat surfaces.

Fig. 15 is a block diagram showing the electrical circuit of the stop lamp 13 thus constructed. The circuit shown in Fig. 15 is provided with an electric source section 101 which, in response to a brake signal supplied through a line L1, converts the power supply voltage (+B) of a battery installed on the vehicle which is provided through lines L2 and L3 into an output voltage, i.e., a constant voltage $+V_B$ (+5V in the embodiment). The electrical circuit is further provided with a clock circuit 102 for applying a clock signal having a

predetermined period to a shift circuit 104, an interface circuit 103 for applying the brake signal received through the line L1 to the shift circuit 104, and a drive circuit 105 for driving a display circuit 106 in response to the "L" level of the output signal of the shift circuit 104. The power source section 101 applies the constant voltage $+V_B$ to the clock circuit 102, the interface circuit 103, the shift circuit 104 and the driver circuit 105. The power supply voltage (+B) provided through the line L2 is applied directly to the display circuit 106.

The power source section 101, the clock circuit 102, the interface circuit 103, the shift circuit 104, and the drive circuit 105 are formed in the control substrate 100. The clock circuit 102, the interface circuit 103, the shift circuit 104, and the drive circuit 105 form a control section. The display circuit 106 is formed by arranging the photodiodes 19 on the printed substrates 18-1 and 18-2. The lines L1, L2 and L3 form the above-described wires 18. The brake signal supplied through the line L1 is applied through a brake switch which is turned on when the brake pedal (not shown) is pressed down. That is, the brake signal is raised to "H" level from "L" level when the brake switch is turned on, and it is set to "L" level when the switch is turned off.

Fig. 2 shows the circuit of Fig. 15 in more detail. As shown in Fig. 2, the electric source section 101 comprises

diodes D1 and D2, resistors R1 through R5, an aluminum electrolytic capacitor C1, a ceramic capacitor C2, a constant voltage diode D2, NPN transistors Q1 and Q2, and a PNP transistor Q3. The clock circuit 102 is made up of a clock generating section 102a, inverters INV1 through INV3, a capacitor C3, and resistors R6 and R7. The interface circuit 103 comprises resistors R8 through R10, an inverter INV4, and an NPN transistor Q4. The shift circuit 104 comprises a first shift register 104-1 and a second shift register 104-2. The drive circuit 105 comprises inverters INV5 through INV10, resistors R11 and R22, and NPN transistors Q5 through Q16. The indication circuit 106 comprises groups of photodiodes 19R-1 through 19R-6, each group having four photodiodes 19, which are arranged on the printed substrate 18-1 in the right-to-left direction, and groups of photodiodes 19L-1 through 19L-6, each group having four photodiodes 19, which are arranged on the printed substrate 18-2 in the left-to-right direction. The groups of photodiodes 19R-1, 19L-1 through 19R-6, and 19L-6 are connected to the collectors of the transistors Q5, Q6 through Q15, and Q16 in the drive circuit 105, respectively.

Now, the operation of the stop lamp apparatus thus constructed will be described below.

When the brake pedal is pressed down, i.e., upon the on" operation of the brake, the brake switch turns on. As a

result, the brake signal supplied through the line L1 is raised to "H" level. Therefore, in the electric source section 101, the voltage of the capacitor C1 is increased, so that the transistor Q1 is rendered conductive (ON), and the transistors Q2 and Q3 are also rendered conductive, whereby the constant voltage $+V_B$ is formed. On the other hand, the "H" level brake signal supplied through the line L1 is further applied to he interface circuit 103, in which the transistor Q4 is rendered conductive (ON), whereby the output of the inverter INV4 is raised to "H" level. The "H" level output of the inverter INV4 is applied to the reset terminals of the first and second shift registers 104-1 and 104-2, as a result of which the outputs provided at the output terminals 104a through 104f are set to "L" level. Accordingly, in the drive circuit 105, the outputs of the inverters INV5 through INV10 are raised to "H" level, and the transistors Q5 through Q16 are rendered conductive (ON). As a result, the groups of photodiodes 19R-1 through 19R-6 and 19L-1 through 19L-6 are all turned on, thus giving a warning signal to the operator in the following vehicle.

When, thereafter, the brake pedal is released; that is, upon the "OFF" operation of the brake, the brake switch is turned off. As a result, the brake signal supplied through the line L1 is set to "L" level. That is, the application of the "H" level brake signal to the power source section 101 is suspended. However, in this case, the capacitor C1 being

discharged, the transistor C1 is maintained conductive (ON) for a certain period of time, and the supply of the constant voltage from the electric source section 101 to the clock circuit 102, the interface circuit 103, the shift circuit 104 and the drive circuit is accordingly continued. The "L" level brake signal supplied through the line L1 is further applied to the interface circuit 103, as a result of which the transistor Q4 is rendered non-conductive (off), and accordingly the output of the inverter INV4 is set to "L" level, whereby the shift registers 104-1 and 104-2 are set. As a result, the clock signal outputted by the clock circuit 102 effectively controls the shift registers 104-1 and 104-2, so that first the output at the output terminal 104a is raised to "H" level. Accordingly, the output of the inverter INV5 is set to "L" level, and the transistors Q5 and Q6 are therefore rendered non-conductive (OFF), whereby the groups of photodiodes 19R-1 and 19L-1 connected thereto are turned off. In response to the following clock signal provided in a predetermined period of time, the output at the output terminal 104b is raised to "H", and the output of the inverter INV6 is set to "L", whereby the groups of photodiodes 19R-2 and 19L-2 located inside the groups of photodiodes 19R-1 and 19L-1, which have been turned off, are turned off. Similarly, the outputs at the output terminals 104c, 104d, 104e and 104f are raised to "H" level successively at the predetermined time intervals, so that the remaining

groups of photodiodes are turned off successively from outside to inside, with the groups of photodiodes 19R-6 and 19L-6 being finally turned off. That is, the groups of photodiodes 19R-1 through 19R-6 and 19L-1 through 19L-6 lined on the printed substrates 18-1 and 18-2 are turned off successively from outside toward center. Thus, when the brake pedal is released, the warning signal is more effectively given to the operator in the following vehicle.

After the groups of photodiodes 19R-6 and 19L-6 being turned off, in the power source section 101 the discharging of the capacitor C1 is accomplished, as a result of which the transistor Q1 is rendered non-conductive, and the production of the constant voltage $+V_B$ is suspended. Accordingly, the supply of the constant voltage $+V_B$ to the circuits is also suspended to minimize the power consumption. Thus, the circuit becomes ready for the next "ON" operation of the brake again.

Fig. 16 shows the case where, with twelve photodiodes lined on each of the printed substrates 18-1 and 18-2, the groups of photodiodes are turned on and off in response to the "ON" and "OFF" operations of the brake. More specifically, Fig. 16A shows the state of the groups of photodiodes when the brake is not in operation; that is, all of the groups of photodiodes 19R-1 through 19R-3 and 19L-1 through 19L-3 are kept turned off. The Fig. 16B shows the state of the groups of photodiodes when the brake pedal is stepped on; that is, all of

the groups of photodiodes 19R-1 through 19R-3 and 19L-1 through 19L-3 are turned on. When, under this condition, the brake pedal is released; i.e., the "off" operation of the brake is effected, in t1 second (for instance in 0.1 second) the outermost groups of photodiodes 19R-1 and 19L-1 are turned off as shown in Fig. 16C. And t2 second (for instance 0.2 second) after the "OFF" operation of the brake, the groups of photodiodes 19R-2 and 19L-2 located inside the groups of photodiodes 19R-1 and 19L-1 which have been turned off are turned off as shown in the part Fig. 16D. As is apparent from the above description, when the brake pedal is released, the groups of photodiodes 19R-1 and 19L-1, 19R-2 and 19L-2, and 19R-3 and 19L-3 are turned off successively from outside to inside, or in the stated order. Thus, when the brake is operated, the warning signal will be more effectively given to the operator in the following vehicle.

In the above-described embodiment, the period of time T required for turning off all of the groups of photodiodes 19R-1 through 19R-6 and 19L-1 through 19L-6 in response to the "OFF" operation of the brake is set to a fixed value which is determined from the period of the clock signal outputted by the clock circuit 102. In other words, the time-division operation time of the groups of photodiodes which are turned off at predetermined time intervals beginning from the two outermost groups of photodiodes is set to the fixed value. On the other

hand, if a variable resistor 107 is provided for the clock circuit 102 to vary the period of the clock signal as indicated the broken line in Fig. 15, then the time-division operation time of the groups of photodiodes can be set to a desired value by adjusting the variable resistor 107, so that the aforementioned period of time T required for turning off all of the groups of photodiodes can be changed. Fig. 17 shows the variable resistor 107 mounted in the lamp unit 17. More specifically, the variable resistor 107 is built in the lamp unit 17 with its cord 108 connected to the control substrate 100, and with its adjusting knob 107a extended outside through the front lens 16 (as shown in Figs. 18 and 19). It is not always necessary to build the variable resistor 107 in the lamp unit 17. For instance, the variable resistor 107 may be installed near the operator's seat inside the vehicle.

In the above-described embodiment, the groups of photodiodes 19R-1 through 19R-6 and 19L-1 through 19L-6 are turned off in a time division mode from outside to center. However, the circuit may be so designed as to turn off the groups of photodiodes are turned off in a time division mode from center to outside, beginning from the two innermost groups of photodiodes, or they are turned off at random. Furthermore in the above-described embodiment, each of the groups of photodiodes includes four photodiodes; however, it goes without saying that the invention is not limited thereto or thereby.

For instance, the photodiodes 19 may be turned off one after another.

In the above-described embodiment, the stop lamp 13 is built in the rear spoiler 11. However, it may be connected to a mounting component such as a spoiler on the roof, or inside the room just behind the rear window.

As described above, in the vehicle lamp apparatus according to the invention, a plurality of light emitting means arranged at predetermined intervals in the widthwise direction of a vehicle body are turned on in response to the "ON" operation of the brake, and then turned off in a time division mode in response to the "off" operation of the brake. Therefore, when the brake pedal is released, the warning signal is more effectively given to the operator in the following vehicle.

## CLAIMS

1. A vehicle lamp actuated in accordance with a brake operation of the vehicle, the vehicle lamp comprising:

a power supply means for supplying a constant voltage;

a display means having a plurality of light emitting means arranged at predetermined intervals in the widthwise direction of a vehicle body; and

a control means for turning on said plurality of light emitting means in response to an actuation of the brake operation and for turning off said light emitting means in a time division mode in response to a release of the brake operation.

2. The vehicle lamp of Claim 1, wherein said power supply means is provided with means for suspending said constant voltage for a predetermined time period after the release of the brake operation.

3. The vehicle lamp of Claim 2, wherein said control means comprises:

means for generating a clock signal having a predetermined period;

means for supplying a brake signal in response to the actuation and release of the brake operation;

shifting means for inputting said clock signal from said clock signal generating means and said brake signal of said brake signal supplying means, said shifting means outputting a plurality of outputs corresponding to said light emitting means, and

means for driving said light emitting means in accordance with said outputs of said shifting means.

4. The vehicle lamp of Claim 3, wherein said shifting means comprises first shift register and second shift register, each shift registers input said clock signal.

5. The vehicle lamp of Claim 3, wherein said driving means comprises a plurality of inverters, a plurality of resisters and a plurality of transistors.

6. The vehicle lamp of Claim 5, wherein said transistors are of NPN type.

7. The vehicle lamp of Claim 1, further comprising:

a unit having a plate-like body and a front lens coupled to said plate-like body;

at least one printed substrate on which said plurality of light emitting means are mounted;

a control substrate connected electrically and mechanically connected to said printed substrate, said control substrate mounting thereon said control means.

8. The vehicle lamp of Claim 7, wherein said plate-like body is provided with a through hole and a communication pipe passing through said through hole, said communication pipe communicating the inside said body with the outside.

9. The vehicle lamp of Claim 8, further comprising a filter disposed at said through hole.

10. The vehicle lamp of Claim 9, wherein said filter is formed of a porous film.

11. The vehicle lamp of Claim 10, wherein said porous film is selected from the group consisting of fluorine film, polyethylene film, ultra-macromolecular polyethylene film and acrylic film.

12. The vehicle lamp of Claim 7, wherein said body is provided with a cord lead-out hole allowing the cord an end of

which is connected to said control substrate to pass therethrough, a bushing is fitted in said cord lead-out hole.

13. The vehicle lamp of Claim 1, wherein said light-emitting means comprising a plurality of photodiodes axes of which extends substantially vertical to the arrangement direction of said photodiodes and substantially parallel to the longitudinal central axis of the vehicle body.

14. The vehicle lamp of Claim 13, wherein said photodiodes are divided into groups each consisting of four photodiodes.

15. The vehicle lamp of Claim 14, wherein the total number of said photodiodes are forty-eight.

16. The vehicle lamp of Claim 7, wherein said front lens is of a laterally elongated box type made of transparent resin.

17. The vehicle lamp of Claim 16, wherein said front lens is colored red.

18. The vehicle lamp of Claim 16, wherein said front lens is colored yellow.

19. The vehicle lamp of Claim 7, wherein a wall of said front lens confronting said light emitting means is inclined towards the rear side of the vehicle body, and a lower end portion of said front lens is curved with a certain curvature.

20. The vehicle lamp of Claim 7, wherein said front lens is provided with a light control section disposed at an upper portion of an inner surface thereof.

21. The vehicle lamp of Claim 20, wherein said light control section is made up of nine prisms which are arranged in a 3 X 3 matrix form.

22. The vehicle lamp of Claim 21, wherein a central axis of said central prism is substantially in alignment with a central axis of said respective light-emitting means.

23. The vehicle lamp of Claim 1, wherein said plurality of light-emitting means are turned off in a time division made from outside to center.

24. The vehicle lamp of Claim 1, wherein said plurality of light-emitting means are turned off in a time division made from center to outside.

25. The vehicle lamp of Claim 1, wherein said plurality of light-emitting means are turned off at random.

26. The vehicle lamp of Claim 7, further comprising variable means for varying a time of said time division mode.

27. The vehicle lamp of Claim 26, wherein said variable means is disposed in said lamp unit.

28. The vehicle lamp of Claim 26, wherein said variable means is disposed near an operator's seat inside the vehicle.

29. The vehicle lamp of Claim 1, wherein said lamp is built in a rear spoiler of the vehicle.

30. The vehicle lamp of Claim 1, wherein said lamp is connected to a mounting component on a roof of the vehicle.

31. The vehicle lamp of Claim 1, wherein said lamp is connected to a mounting component inside the vehicle room just behind a rear window thereof.



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